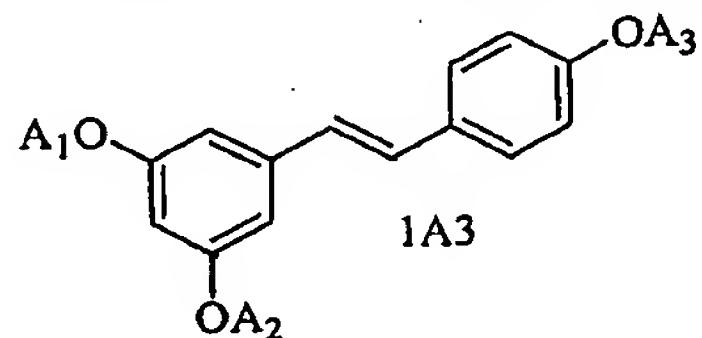


## CLAIMS

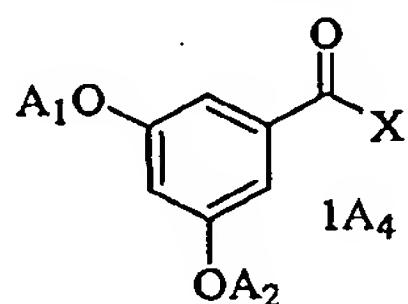
We claim:

1. A process for preparing a compound of Formula 1A3:

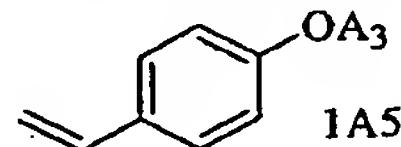


5 where  $A_1$  is selected from  $P_1$  and  $(CO)R_1$ ,  $A_2$  is selected from  $P_2$  and  $(CO)R_2$ ,  $A_3$  is selected from  $P_3$  and  $(CO)R_3$ , where  $P_1$  when present is a first alcohol protecting group,  $P_2$  when present is a second alcohol protecting group,  $P_3$  when present is a third alcohol protecting group,  $R_1$ ,  $R_2$  and  $R_3$  when present are each independently selected from alkyl with at least one carbon atom, aryl, aralkyl, and diastereoisomers  
10 of the foregoing, comprising:

coupling a benzoyl halide compound of Formula 1A4

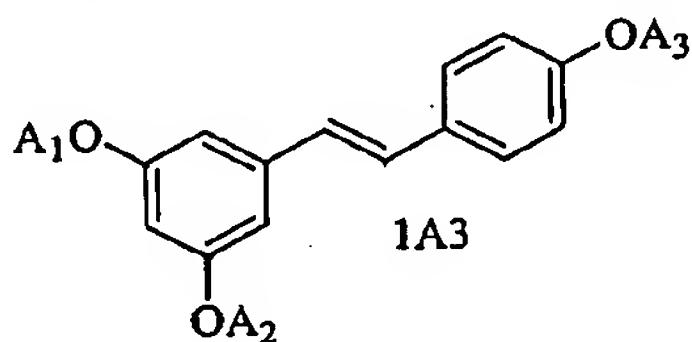


where  $X$  is halogen, with a 4-substituted styrene compound of Formula 1A5



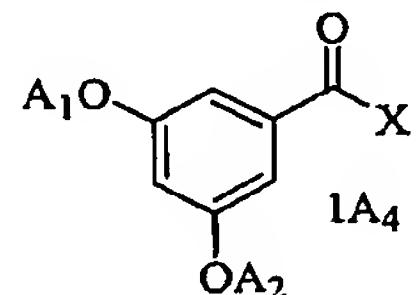
15 in solution or in suspension of a first solvent, transition metal catalyst, N-heterocyclic carbene-type ligand and a first base.

2. A process for preparing a compound of Formula 1A3:

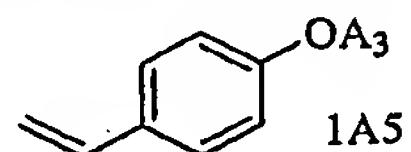


20 where  $A_1$  is selected from  $P_1$  and  $(CO)R_1$ ,  $A_2$  is selected from  $P_2$  and  $(CO)R_2$ ,  $A_3$  is selected from  $P_3$  and  $(CO)R_3$ , where  $P_1$  when present is a first alcohol protecting group,  $P_2$  when present is a second alcohol protecting group,  $P_3$  when present is a third alcohol protecting group,  $R_1$ ,  $R_2$  and  $R_3$  when present are each independently

selected from alkyl with at least two carbon atoms, aryl, aralkyl, and diastereoisomers of the foregoing, comprising:  
coupling a benzoyl halide compound of Formula 1A4

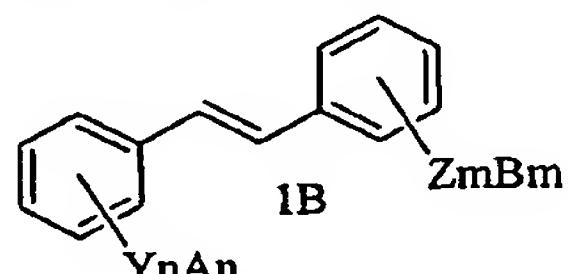


5 where X is halogen, with a 4-substituted styrene compound of Formula 1A5

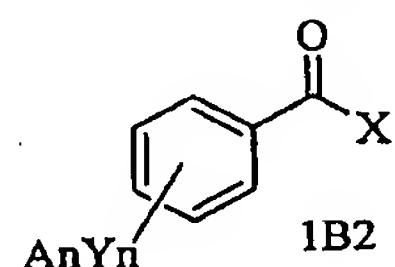


in solution or in suspension of a first solvent, transition metal catalyst, N-heterocyclic carbene-type ligand and a first base.

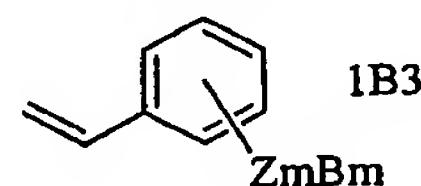
10 3. A process for preparing a compound of Formula 1B



where Y is independently selected from NH and O, n is equal to 0, 1, 2, 3, 4 or 5, Z is independently selected from NH and O, m is equal to 0, 1, 2, 3, 4 or 5, each A and each B is independently selected from R, P<sub>1</sub>, P<sub>2</sub> and P<sub>3</sub> and each R is independently selected from alkyl with at least one carbon atom, aryl, aralkyl, and diastereoisomers of the foregoing and P<sub>1</sub>, P<sub>2</sub> and P<sub>3</sub> are protecting groups, comprising the step of 15 coupling a benzoyl halide compound of Formula 1B2



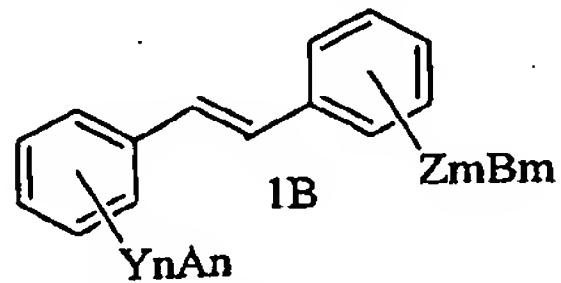
where X is halogen, with styrene compound of Formula 1B3



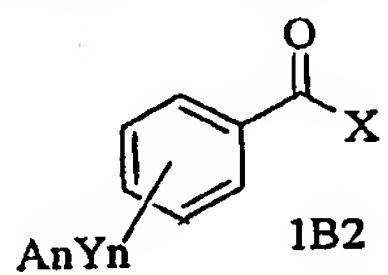
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in solution or in suspension of a first solvent, transition metal catalyst, N-heterocyclic carbene-type ligand and a first base.

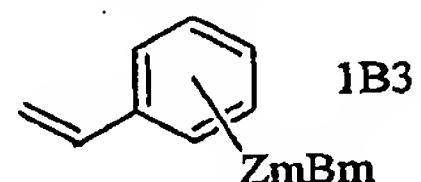
## 4. A process for preparing a compound of Formula 1B



where Y is independently selected from NH and O, n is equal to 0, 1, 2, 3, 4 or 5, Z is independently selected from NH and O, m is equal to 0, 1, 2, 3, 4 or 5, each A and each B is independently selected from R, P<sub>1</sub>, P<sub>2</sub> and P<sub>3</sub> and each R is independently selected from alkyl with at least two carbon atoms, aryl, aralkyl, and diastereoisomers of the foregoing and P<sub>1</sub>, P<sub>2</sub> and P<sub>3</sub> are protecting groups, comprising the step of coupling a benzoyl halide compound of Formula 1B2

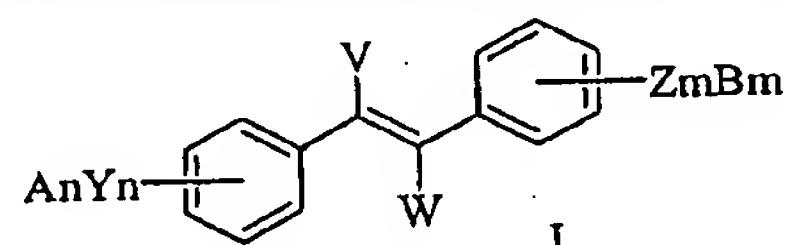


10 where X is halogen, with styrene compound of Formula 1B3



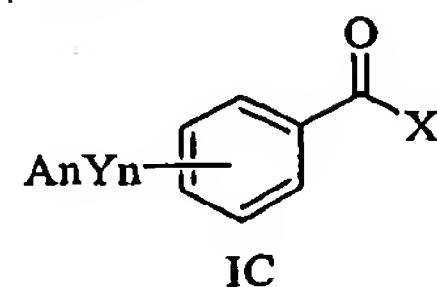
in solution or in suspension of a first solvent, transition metal catalyst, N-heterocyclic carbene-type ligand and a first base.

## 15 5. A process for preparing a compound of Formula I

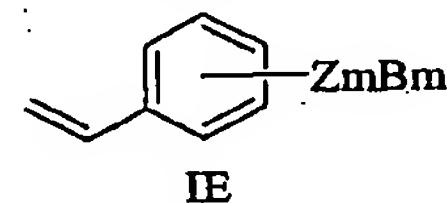


where each Y is -O or halogen, each Z is -O or halogen, each n is independently the value of 0, 1, 2, 3, 4 or 5, each m is independently the value of 0, 1, 2, 3, 4 or 5, each A is independently selected from P<sub>n</sub>, R or absent, each B is independently selected from H, R or absent, each V is independently selected from P<sub>n</sub>, straight or branched alkyl of from 1 to 6 carbon atoms and cycloalkyl of from 3 to 8 carbon atoms, alkoxy, phenyl, benzyl or halogen, each W is independently selected from H, straight or branched alkyl of from 1 to 6 carbon atoms and cycloalkyl of from 3 to 8 carbon atoms, alkoxy, phenyl, benzyl or halogen, where R is selected from the group alkyl with at least one carbon atom, aryl and aralkyl, P<sub>n</sub> is an alcohol protecting

group and diastereoisomers of the foregoing, comprising the step of coupling a benzoyl halide compound of Formula IC



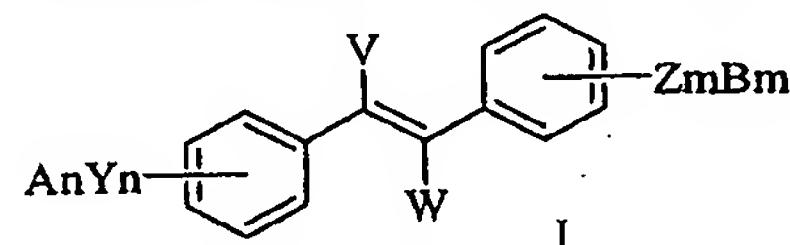
where X is halogen, with a 4-substituted styrene compound of Formula IE



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in solution or in suspension of a first solvent, transition metal catalyst, N-heterocyclic carbene-type ligand and a first base.

6. A process for preparing a compound of Formula I



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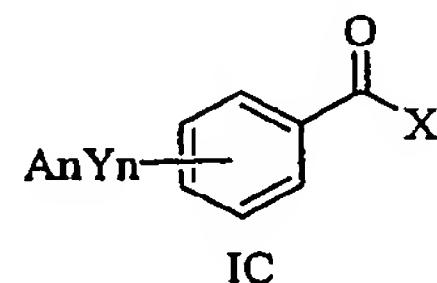
where each Y is -O or halogen, each Z is -O or halogen, each n is independently the value of 0, 1, 2, 3, 4 or 5, each m is independently the value of 0, 1, 2, 3, 4 or 5,

each A is independently selected from P<sub>n</sub>, R or absent, each B is independently selected from H, R or absent, each V is independently selected from P<sub>n</sub>, straight or

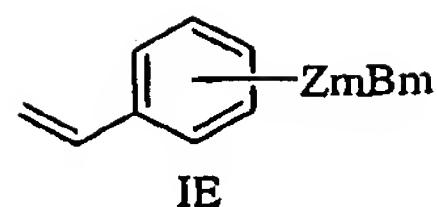
15 branched alkyl of from 2 to 6 carbon atoms and cycloalkyl of from 3 to 8 carbon atoms, alkoxy, phenyl, benzyl or halogen, each W is independently selected from H, straight or branched alkyl of from 1 to 6 carbon atoms and cycloalkyl of from 3 to 8

carbon atoms, alkoxy, phenyl, benzyl or halogen, where each R is independently selected from alkyl with at least two carbon atoms, aryl and aralkyl, P<sub>n</sub> is an alcohol

20 protecting group and diastereoisomers of the foregoing, comprising the step of coupling a benzoyl halide compound of Formula IC

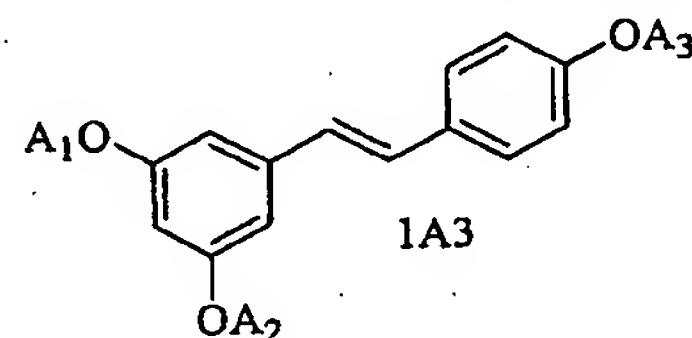


where X is halogen, with a 4-substituted styrene compound of Formula IE



in solution or in suspension of a first solvent, transition metal catalyst, N-heterocyclic carbene-type ligand and a first base.

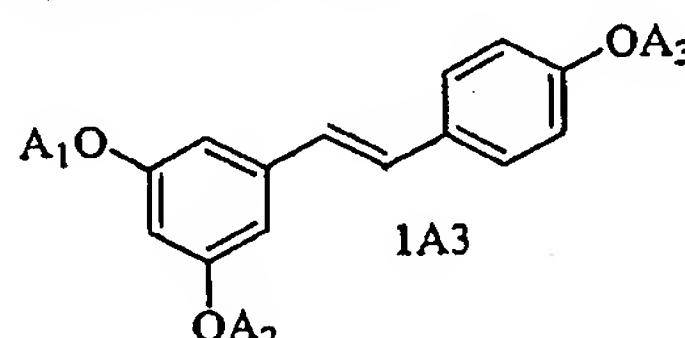
5           7.     A process for preparing resveratrol from compounds of Formula 1A3



where  $A_1$  is selected from  $P_1$  and  $(CO)R_1$ ,  $A_2$  is selected from  $P_2$  and  $(CO)R_2$ ,  $A_3$  is selected from  $P_3$  and  $(CO)R_3$ , where  $P_1$  when present is a first alcohol protecting group,  $P_2$  when present is a second alcohol protecting group,  $P_3$  when present is a third alcohol protecting group,  $R_1$ ,  $R_2$  and  $R_3$  when present are each independently selected from alkyl with at least one carbon atom, aryl, aralkyl, and diastereoisomers of the foregoing, comprising the step or steps:

- (a) reacting said compounds of Formula 1 with a first base in a first solvent; and/or,
- 15       (b) reacting said compounds of Formula 1 with one or more deprotection reactants to remove said alcohol protecting groups  $P_1$ ,  $P_2$  and  $P_3$ .

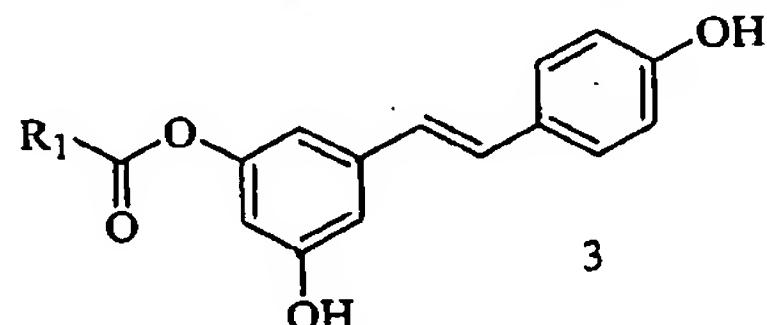
8.     A process for preparing resveratrol from compounds of Formula 1A3



20       where  $A_1$  is selected from  $P_1$  and  $(CO)R_1$ ,  $A_2$  is selected from  $P_2$  and  $(CO)R_2$ ,  $A_3$  is selected from  $P_3$  and  $(CO)R_3$ ,  $P_1$  when present is a first alcohol protecting group,  $P_2$  when present is a second alcohol protecting group,  $P_3$  when present is a third alcohol protecting group,  $R_1$ ,  $R_2$  and  $R_3$  when present are each independently selected from alkyl with at least two carbon atoms, aryl, aralkyl, and diastereoisomers of the foregoing, comprising the step or steps:

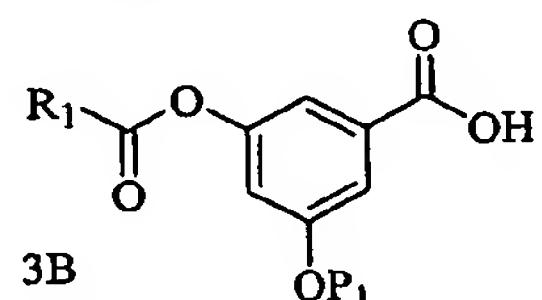
- (a) reacting said compounds of Formula 1 with a first base in a first solvent; and/or,
- (b) reacting said compounds of Formula 1 with one or more deprotection reactants to remove said alcohol protecting groups P<sub>1</sub>, P<sub>2</sub> and P<sub>3</sub>.

5           9.       A process for preparing a compound of Formula 3



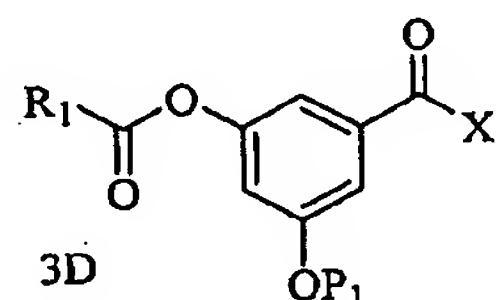
pharmaceutically and cosmetically acceptable salts thereof where R<sub>1</sub> is selected from alkyl with at least one carbon atom, aryl, aralkyl, and diastereoisomers of the foregoing, comprising:

- 10       (a) esterifying a first alcohol of resorcylic acid with an acylating agent in solution or in suspension of a first solvent;
- (b) reacting a second alcohol of resorcylic acid with a first alcohol protecting agent in solution or in suspension of a second solvent, wherein the sequence of steps (a) and (b) are interchangeable, to give the mono-15 ester, mono-protected alcohol of Formula 3B



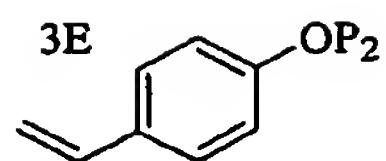
where P<sub>1</sub> is a first alcohol protecting group;

- (c) halogenating said compound of Formula 3B using a halogenating agent in solution or in suspension of a third solvent to give the acid halide of 20       Formula 3D

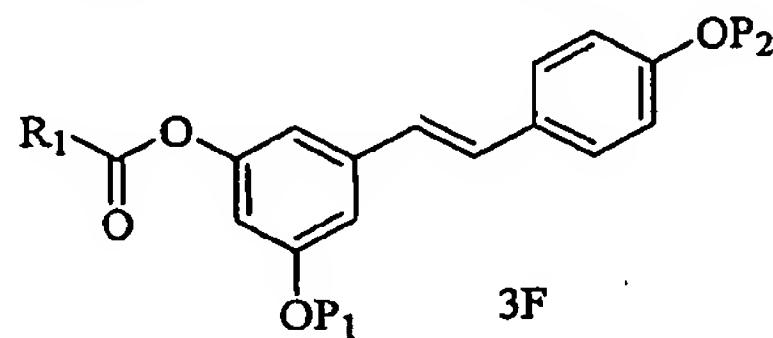


where X is halogen;

- (d) coupling said compound of Formula 3E with a compound of Formula 3D



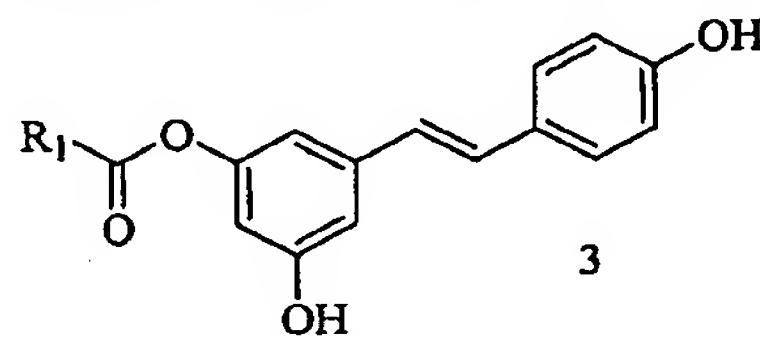
where  $P_2$  is a second alcohol protecting group, with transition metal catalyst, N-heterocyclic carbene-type ligand, and a first base in solution or in suspension of a fourth solvent to yield a compound of Formula 3F;



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(e) deprotecting said first and second alcohol protecting groups from said compound of Formula 3F to give the compound of Formula 3.

10. A process for preparing a compound of Formula 3

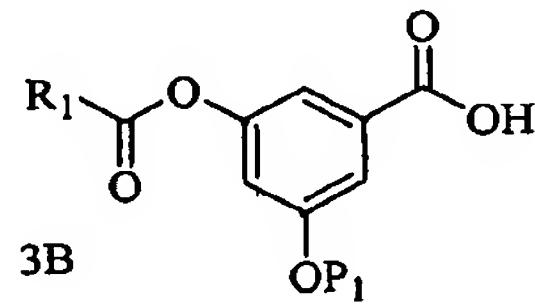


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pharmaceutically and cosmetically acceptable salts thereof where  $R_1$  is selected from alkyl with at least two carbon atoms, aryl, aralkyl, and diastereoisomers of the foregoing, comprising:

(a) esterifying a first alcohol of resorcylic acid with an acylating agent in solution or in suspension of a first solvent;

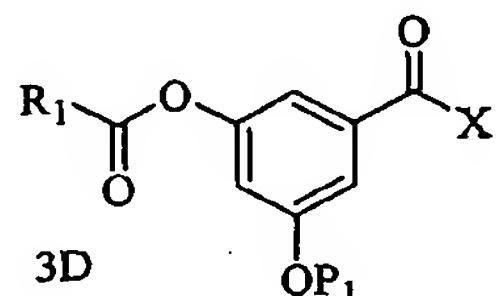
(b) reacting a second alcohol of resorcylic acid with a first alcohol protecting agent in solution or in suspension of a second solvent, wherein the sequence of steps (a) and (b) are interchangeable to give the mono-ester, mono-protected alcohol of Formula 3B



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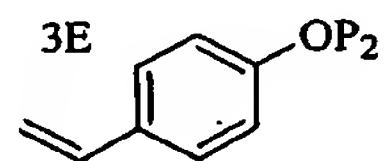
where  $P_1$  is a first alcohol protecting group;

(c) halogenating said compound of Formula 3B using a halogenating agent in solution or in suspension of a third solvent to give the acid halide of Formula 3D

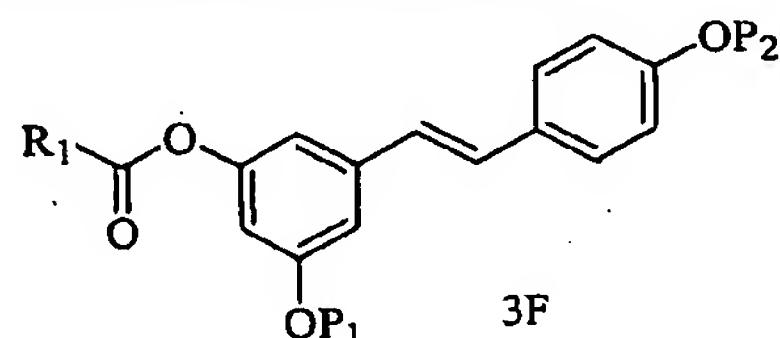


5 where X is halogen;

(d) coupling said compound of Formula 3E with a compound of Formula 3D



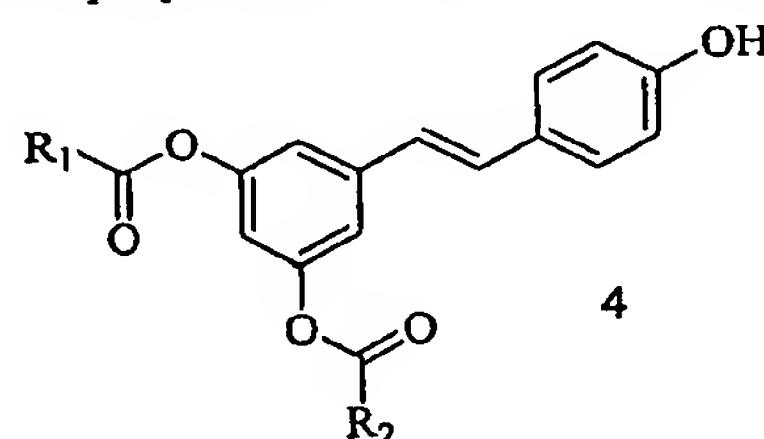
10 where P2 is a second alcohol protecting group, with transition metal catalyst, N-heterocyclic carbene-type ligand, and a first base in solution or in suspension of a fourth solvent to yield a compound of Formula 3F;



(e) deprotecting said first and second alcohol protecting groups from said compound of Formula 3F to give the compound of Formula 3.

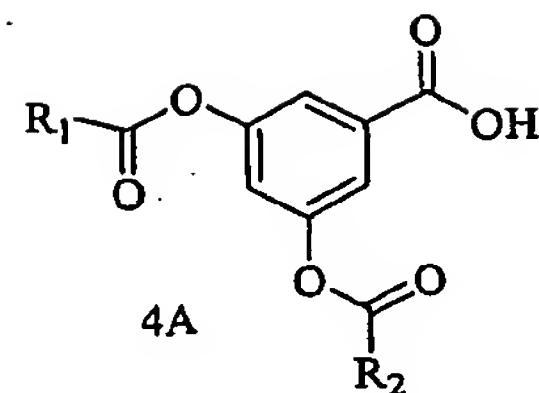
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11. A process for preparing a compound of Formula 4

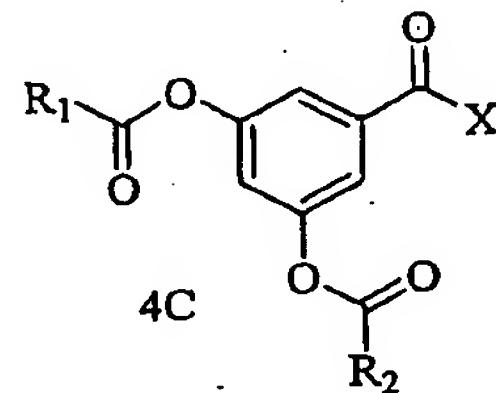


pharmaceutically and cosmetically acceptable salts thereof where R1 and R2 are independently selected from alkyl with at least one carbon atom, aryl, aralkyl, and 20 diastereoisomers of the foregoing, comprising:

(a) esterifying resorcylic acid with an acylating agent in solution or in suspension of a first solvent to give the 3,5-diester of resorcylic acid of Formula 4A;



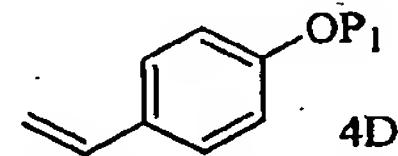
(b) halogenating said compound of Formula 4a using a halogenating agent in solution or in suspension of a second solvent to give the acid halide of Formula 4C



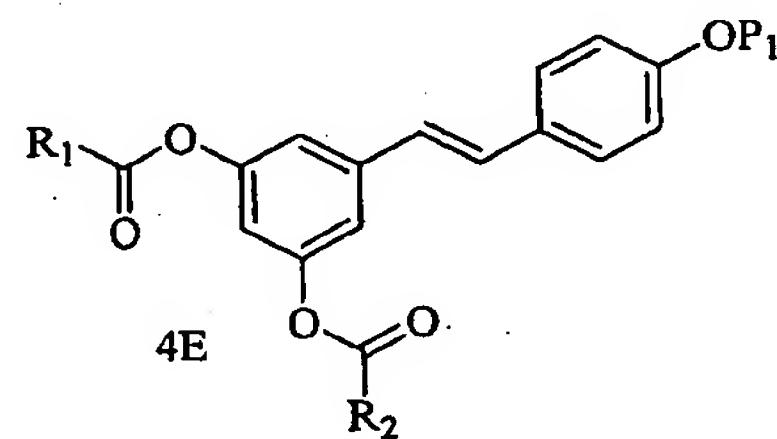
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where X is halogen;

(c) coupling said compound of Formula 4C with a compound of Formula 4D

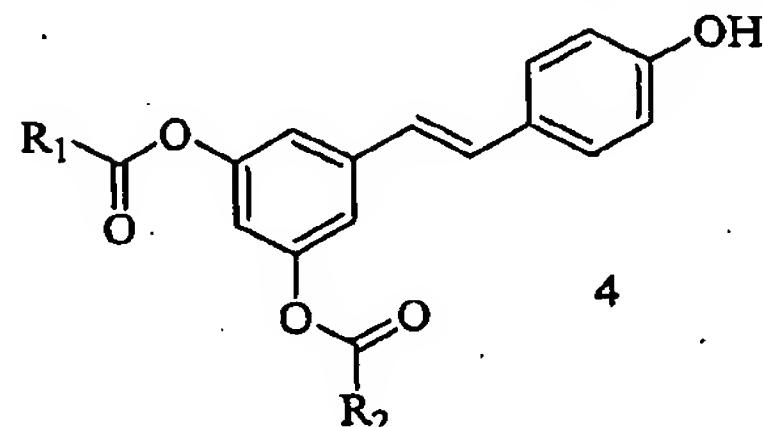


10 where P<sub>3</sub> is a first alcohol protecting group, with transition metal catalyst, N-heterocyclic carbene-type ligand, and a first base in solution or in suspension of a third solvent to yield a compound of Formula 4E;



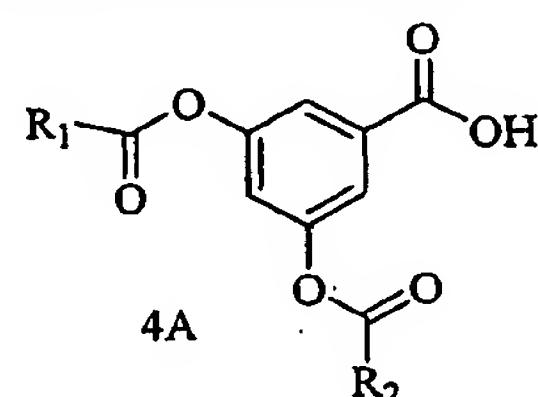
(d) deprotecting said first alcohol protecting group from said compound 15 of Formula 4E to give the compound of Formula 4.

## 12. A process for preparing a compound of Formula 4

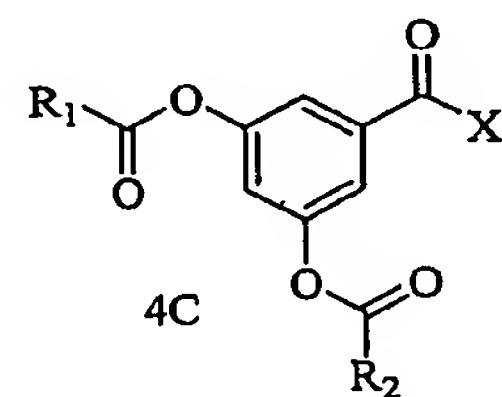


pharmaceutically and cosmetically acceptable salts thereof where  $R_1$  and  $R_2$  are independently selected from alkyl with at least two carbon atoms, aryl, aralkyl, and 5 diastereoisomers of the foregoing, comprising:

(a) esterifying resorcylic acid with an acylating agent in solution or in suspension of a first solvent to give the 3,5-diester of resorcylic acid of Formula 4A;



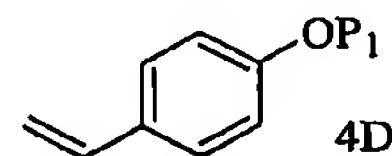
(b) halogenating said compound of Formula 4a using a halogenating agent in solution or in suspension of a second solvent to give the acid halide of 10 Formula 4C



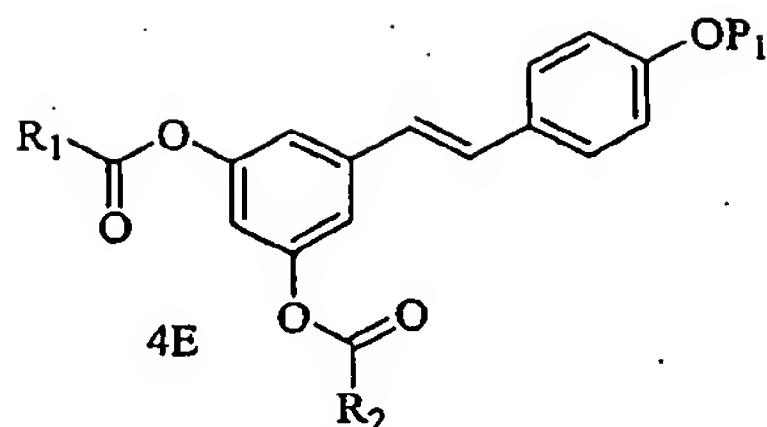
where X is halogen;

(c) coupling said compound of Formula 4C with a compound of Formula

15 4D



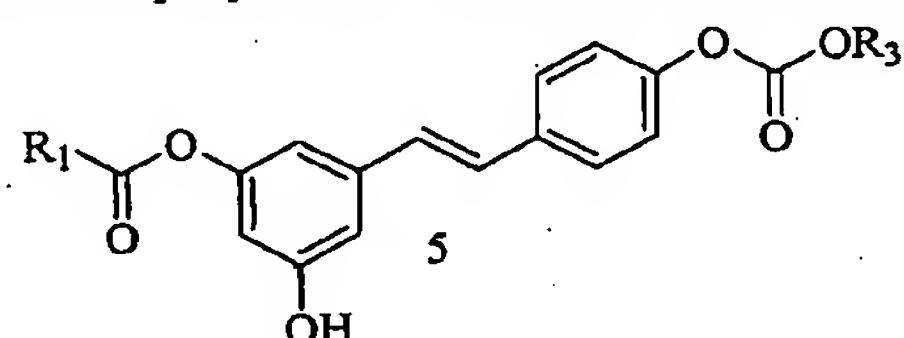
where  $P_3$  is a first alcohol protecting group, with transition metal catalyst, N-heterocyclic carbene-type ligand, and a first base in solution or in suspension of a third solvent to yield a compound of Formula 4E;



(d) deprotecting said first alcohol protecting group from said compound of Formula 4E to give a compound of said Formula 4.

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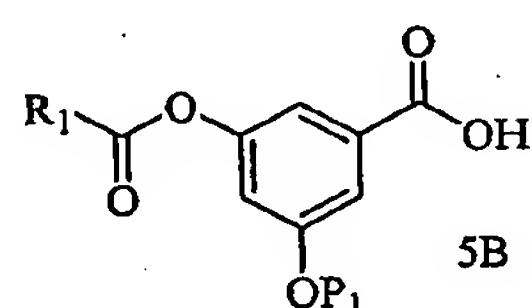
13. A process for preparing a compound of Formula 5



pharmaceutically and cosmetically acceptable salts thereof where R<sub>1</sub> and R<sub>3</sub> are independently selected from alkyl with at least one carbon atom, aryl, aralkyl, and diastereoisomers of the foregoing, comprising:

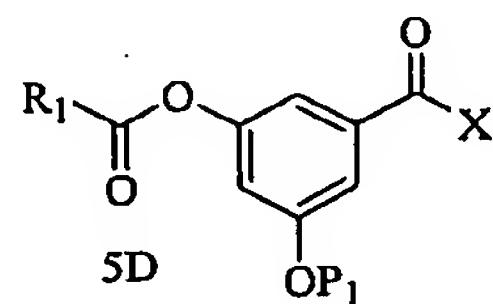
10 (a) esterifying a first alcohol of resorcylic acid with an acylating agent in solution or in suspension of a first solvent;

(b) reacting a second alcohol of resorcylic acid with a first alcohol protecting agent in solution or in suspension of a second solvent, wherein the sequence of steps (a) and (b) are interchangeable to give the mono-ester, 15 mono-protected alcohol of Formula 5B



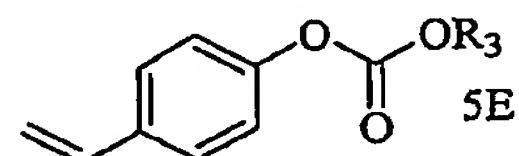
where P<sub>1</sub> is a first alcohol protecting group;

(c) halogenating said compound of Formula 5B using a halogenating agent in solution or in suspension of a third solvent to give the acid halide of 20 Formula 5D

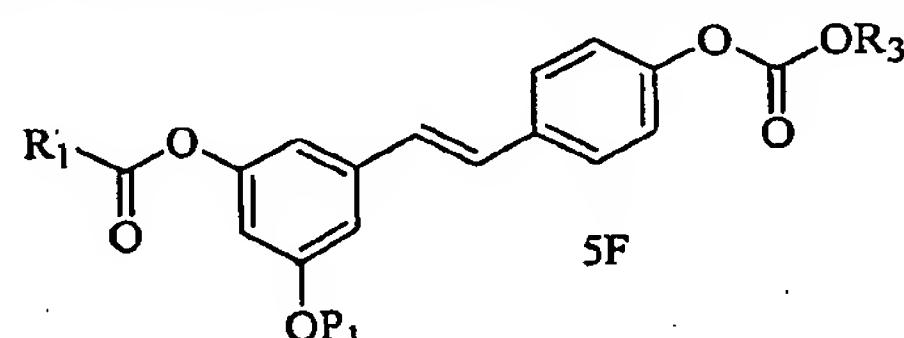


where X is halogen;

(d) coupling said compound of Formula 5D with a compound of Formula 5E

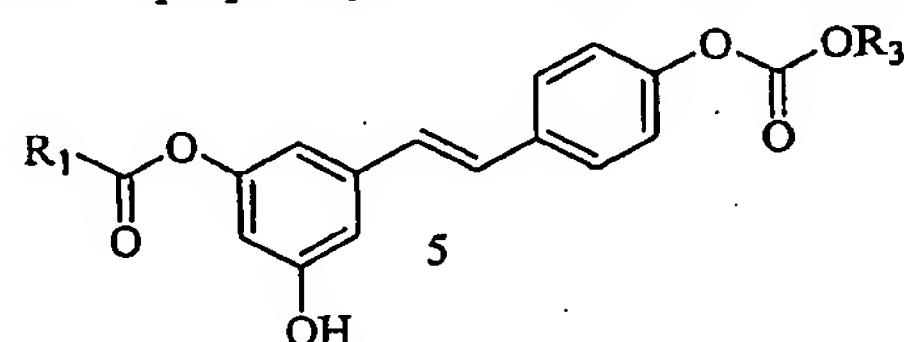


5 with transition metal catalyst, N-heterocyclic carbene-type ligand, and a first base in solution or in suspension of a fourth solvent to yield a compound of Formula 5F;



(e) deprotecting said first and second protecting groups from said compound of Formula 5F to give a compound of said Formula 5.

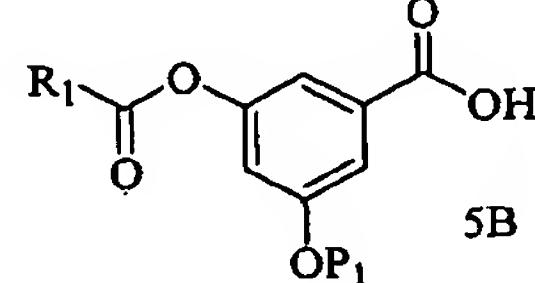
10 14. A process for preparing a compound of Formula 5



pharmaceutically and cosmetically acceptable salts thereof where R<sub>1</sub> and R<sub>3</sub> are independently selected from alkyl with at least two carbon atoms, aryl, aralkyl, and diastereoisomers of the foregoing, comprising:

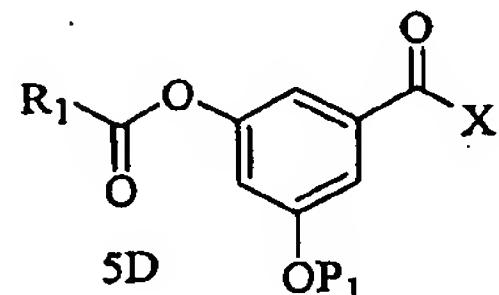
15 (a) esterifying a first alcohol of resorcylic acid with an acylating agent in solution or in suspension of a first solvent;

(b) reacting a second alcohol of resorcylic acid with a first alcohol protecting agent in solution or in suspension of a second solvent, wherein the sequence of steps (a) and (b) are interchangeable to give the mono-ester, 20 mono-protected alcohol of Formula 5B



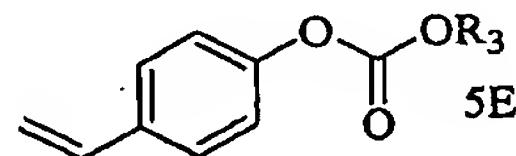
where P<sub>1</sub> is a first alcohol protecting group;

(c) halogenating said compound of Formula 5B using a halogenating agent in solution or in suspension of a third solvent to give the acid halide of Formula 5D

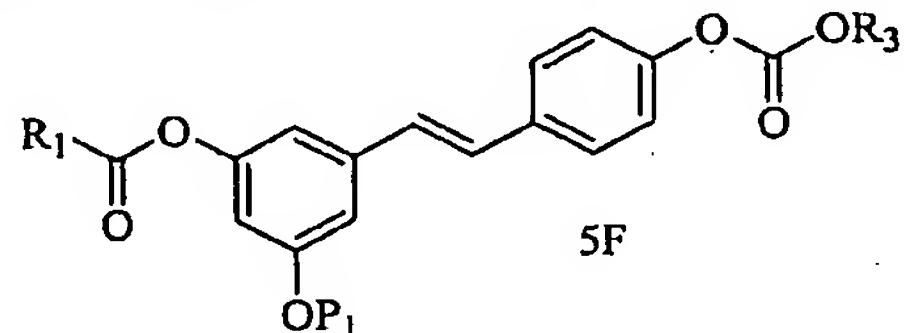


5 where X is halogen;

(d) coupling said compound of Formula 5D with a compound of Formula 5E

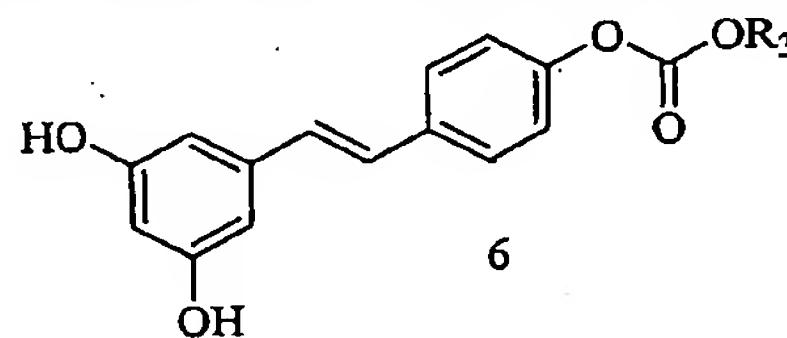


10 with transition metal catalyst, N-heterocyclic carbene-type ligand, and a first base in solution or in suspension of a fourth solvent to yield a compound of Formula 5F;



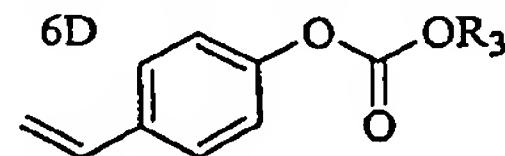
(e) deprotecting said first and second protecting groups from said compound of Formula 5F to give the compound of Formula 5.

15 15. A process for preparing a compound of Formula 6

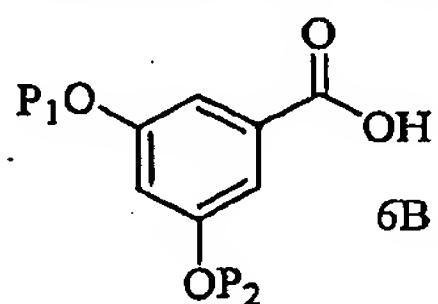


pharmaceutically and cosmetically acceptable salts thereof where R<sub>3</sub> is selected from alkyl with at least one carbon atom, aryl, aralkyl, and diastereoisomers of the foregoing, comprising:

20 (a) esterifying 4-hydroxy styrene with an acylating agent in solution or in suspension of a first solvent to give the 4-ester styrene of Formula 6D;

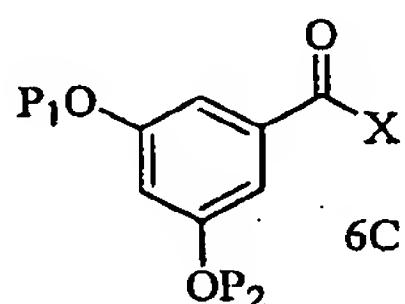


(b) reacting resorcylic acid with an alcohol protecting agent in solution or in suspension of a second solvent to give a compound of Formula 6B



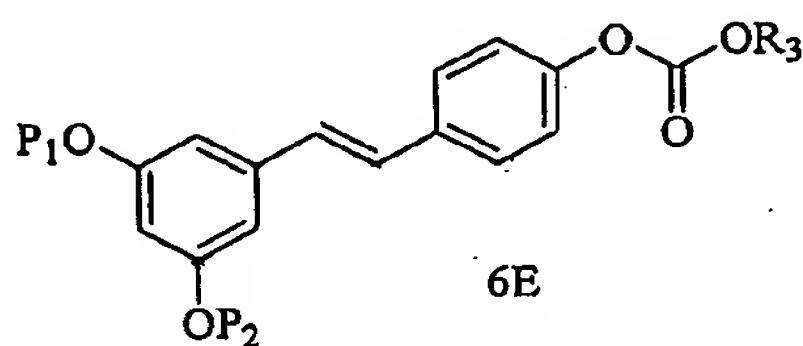
5 where P<sub>1</sub> is a first alcohol protecting group and P<sub>2</sub> is a second alcohol protecting group;

(c) halogenating said compound of Formula 6B using a halogenating agent in solution or in suspension of a third solvent to give the acid halide of Formula 6C



10 where X is halogen;

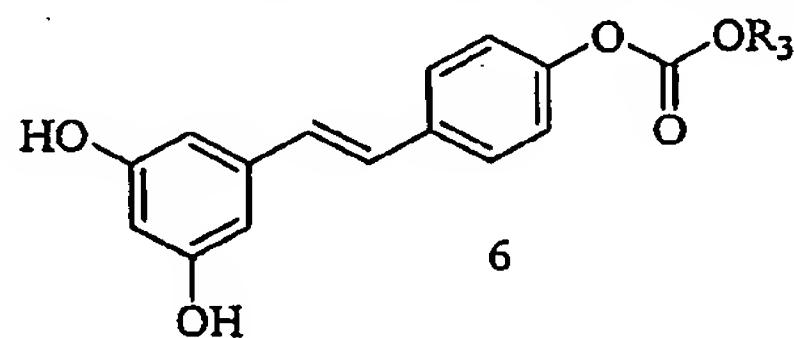
(d) coupling said compound of Formula 6D with a compound of Formula 6C with transition metal catalyst, N-heterocyclic carbene-type ligand, and a first base in solution or in suspension of a fourth solvent to yield a compound of Formula 6E;



15

(e) deprotecting said first alcohol protecting group from said compound of Formula 6E to give the compound of Formula 6.

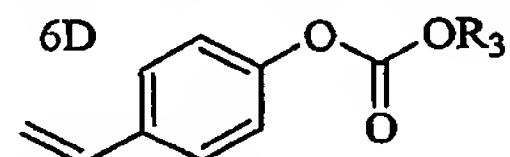
16. A process for preparing a compound of Formula 6



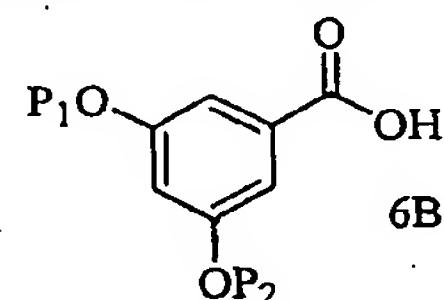
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pharmaceutically and cosmetically acceptable salts thereof where  $R_3$  is selected from alkyl with at least two carbon atoms, aryl, aralkyl, and diastereoisomers of the foregoing, comprising:

5 (a) esterifying 4-hydroxy styrene with an acylating agent in solution or in suspension of a first solvent to give the 4-ester styrene of Formula 6D;

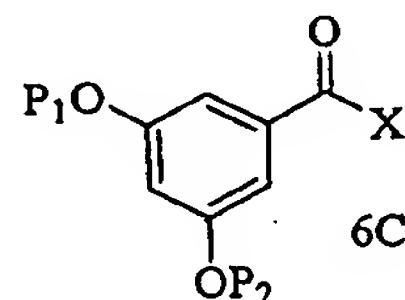


(b) reacting resorcylic acid with an alcohol protecting agent in solution or in suspension of a second solvent to give a compound of Formula 6B



10 where  $P_1$  is a first alcohol protecting group and  $P_2$  is a second alcohol protecting group;

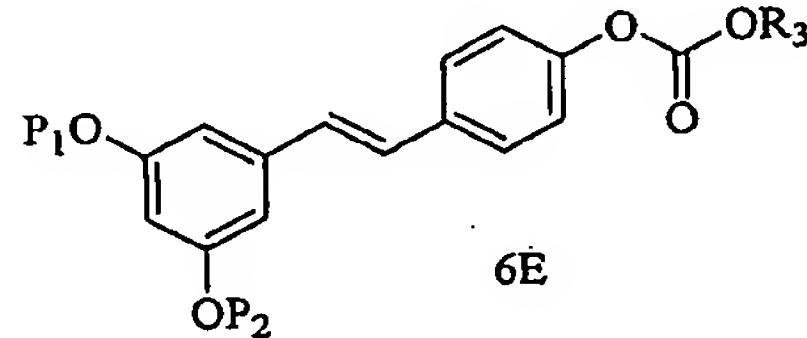
(c) halogenating said compound of Formula 6B using a halogenating agent in solution or in suspension of a third solvent to give the acid halide of Formula 6C



15

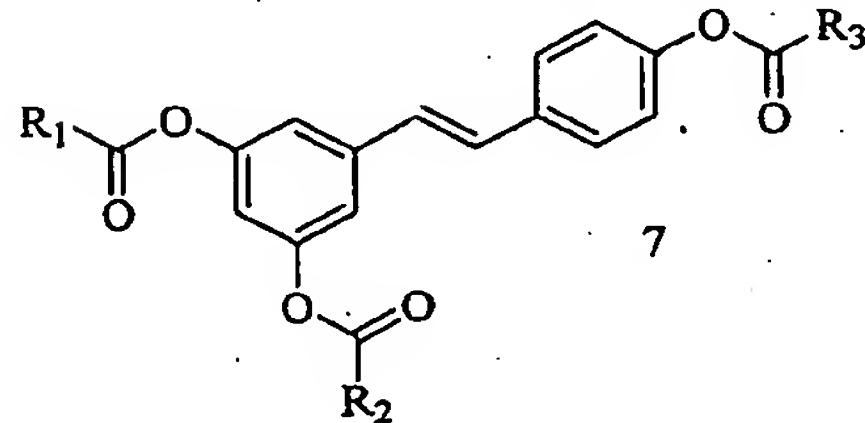
where  $X$  is halogen;

(d) coupling said compound of Formula 6D with a compound of Formula 6C with transition metal catalyst, N-heterocyclic carbene-type ligand, and a first base in solution or in suspension of a fourth solvent to yield a compound of Formula 20 6E;



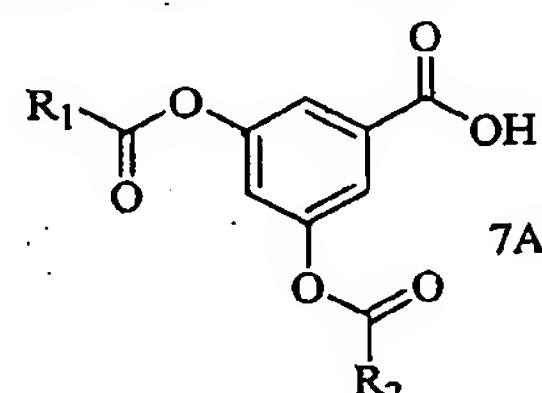
(e) deprotecting said first alcohol protecting group from said compound of Formula 6E to give the compound of Formula 6.

## 17. A process for preparing a compound of Formula 7

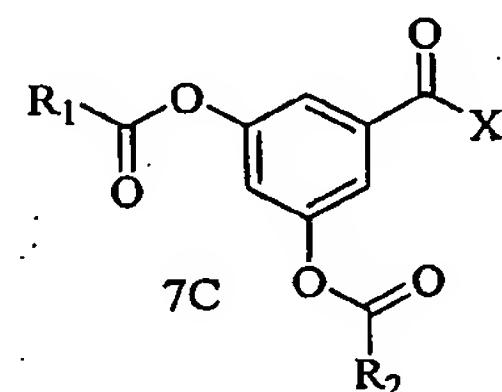


pharmaceutically and cosmetically acceptable salts thereof where  $R_1$ ,  $R_2$  and  $R_3$  are independently selected from alkyl with at least one carbon atom, aryl, aralkyl, and 5 diastereoisomers of the foregoing, comprising:

(a) esterifying resorcylic acid with an acylating agent in solution or in suspension of a first solvent to give the 3,5-diester of resorcylic acid of Formula 7A;

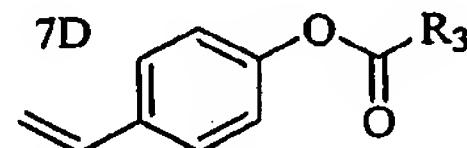


(b) halogenating said compound of Formula 7A using a halogenating 10 agent in solution or in suspension of a second solvent to give the acid halide of Formula 7C



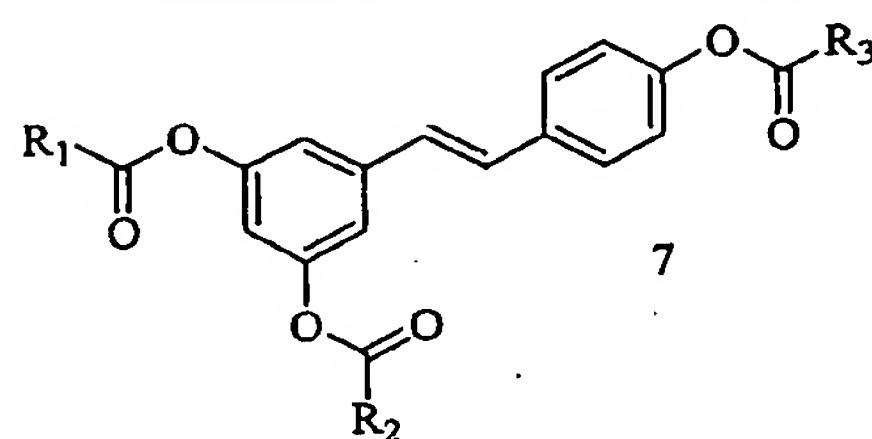
where  $X$  is halogen;

(c) coupling said compound of Formula 7C with a compound of Formula 15 7D



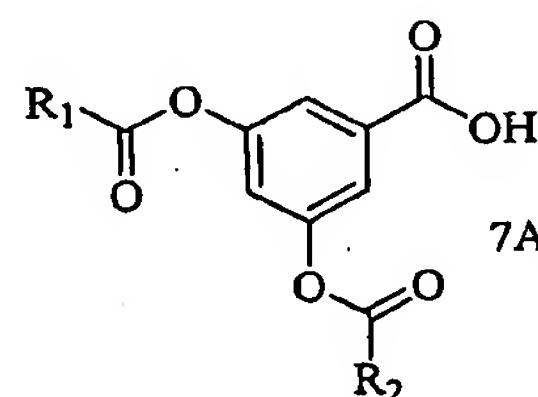
with transition metal catalyst, N-heterocyclic carbene-type ligand, and a first base in solution or in suspension of a third solvent.

## 18. A process for preparing a compound of Formula 7

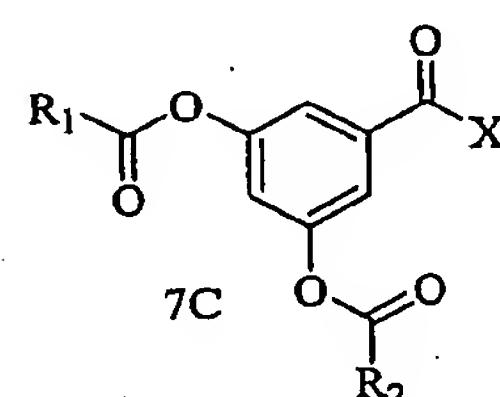


pharmaceutically and cosmetically acceptable salts thereof where R<sub>1</sub>, R<sub>2</sub> and R<sub>3</sub> are independently selected from alkyl with at least two carbon atoms, aryl, aralkyl, and 5 diastereoisomers of the foregoing, comprising:

(a) esterifying resorcylic acid with an acylating agent in solution or in suspension of a first solvent to give the 3,5-diester of resorcylic acid of Formula 7A;

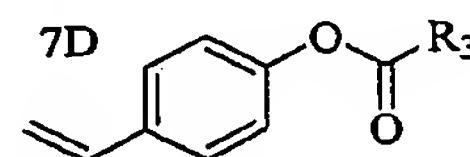


10 (b) halogenating said compound of Formula 7A using a halogenating agent in solution or in suspension of a second solvent to give the acid halide of Formula 7C



where X is halogen;

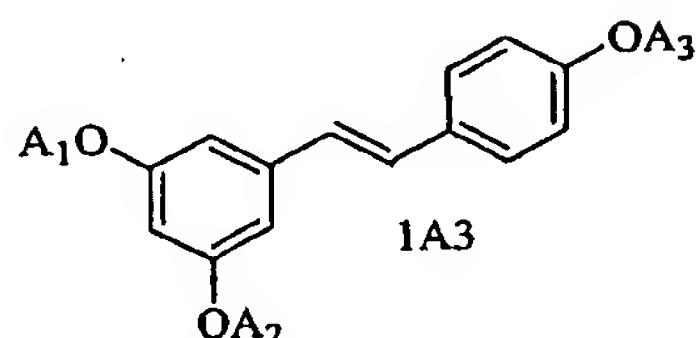
15 (c) coupling said compound of Formula 7C with a compound of Formula 7D



with transition metal catalyst, N-heterocyclic carbene-type ligand, and a first base in solution or in suspension of a third solvent.

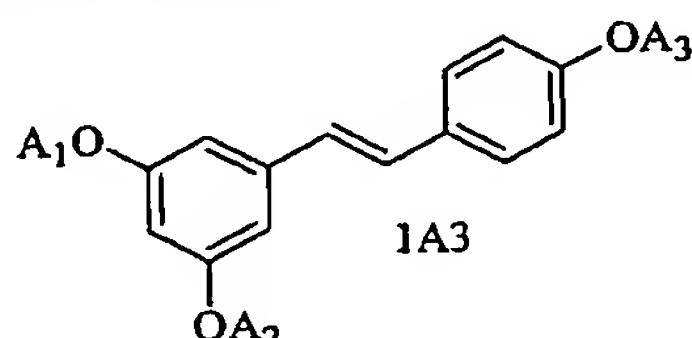
19. A compound of any of Formulas 1A3, 1B, I, 3-7 prepared from any of the processes of claims 1-18.

20. A compound of Formula 9



5 where  $A_1$  is selected from H and  $(CO)R_1$ ,  $A_2$  is selected from H and  $(CO)R_2$ ,  $A_3$  is selected from H and  $(CO)R_3$ ,  $R_1$ ,  $R_2$  and  $R_3$  when present are each independently selected from alkyl with at least one carbon atom, aryl, aralkyl, and diastereoisomers of the foregoing.

21. A compound of Formula 9



10 where  $A_1$  is selected from H and  $(CO)R_1$ ,  $A_2$  is selected from H and  $(CO)R_2$ ,  $A_3$  is selected from H and  $(CO)R_3$ ,  $R_1$ ,  $R_2$  and  $R_3$  when present are each independently selected from alkyl with at least two carbon atoms, aryl, aralkyl, and diastereoisomers of the foregoing.

15

22. A compound selected from the group consisting essentially of:

5,4'-dihydroxy-3-propanoate stilbene, 3,5-dihydroxy-4'-propanoate stilbene, 3,4'-dihydroxy-5-propanoate stilbene, 4'-hydroxy-3,5-dipropanoate stilbene, 5-hydroxy-3,4'-dipropanoate stilbene, 3,5,4'-tripropanoate stilbene,

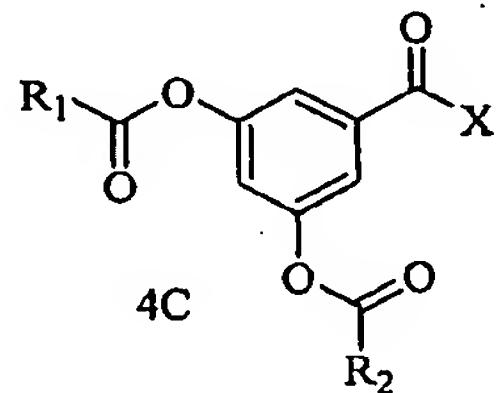
20 5,4'-dihydroxy-3-butanoate stilbene, 3,5-dihydroxy-4'-butanoate stilbene, 3,4'-dihydroxy-5-butanoate stilbene, 4'-hydroxy-3,5-dibutanoate stilbene, 5-hydroxy-3,4'-dibutanoate stilbene, 3,5,4'-tributanoate stilbene, 5,4'-dihydroxy-3-pentanoate stilbene, 3,5-dihydroxy-4'-pentanoate stilbene, 3,4'-dihydroxy-5-pentanoate stilbene, 4'-hydroxy-3,5-dipentanoate stilbene, 5-hydroxy-3,4'-dipentanoate stilbene, 3,5,4'-tripentanoate stilbene, 5,4'-dihydroxy-3-hexanoate stilbene, 3,5-

25

dihydroxy-4'-hexanoate stilbene, 3,4'-dihydroxy-5-hexanoate stilbene, 4'-hydroxy-3,5-dihexanoate stilbene, 5-hydroxy-3,4'-dihexanoate stilbene, 3,5,4'-trihexanoate stilbene, 5,4'-dihydroxy-3-(2,4-hexadienoate) stilbene, 3,5-dihydroxy-4'-(2,4-hexadienoate) stilbene, 3,4'-dihydroxy-5-(2,4-hexadienoate) stilbene, 4'-hydroxy-3,5-(2,4-hexadienoate) stilbene, 5-hydroxy-3,4'-(2,4-hexadienoate) stilbene, 3,5,4'-tri-(2,4-hexanoate) stilbene, 5,4'-dihydroxy-3-dodecanoate stilbene, 3,5-dihydroxy-4'-dodecanoate stilbene, 3,4'-dihydroxy-5-dodecanoate stilbene, 4'-hydroxy-3,5-dodecanoate stilbene, 5-hydroxy-3,4'-dodecanoate stilbene, 3,5,4'-tridodecanoate stilbene, 5,4'-dihydroxy-3-hexadecanoate stilbene, 3,5-dihydroxy-4'-hexadecanoate stilbene, 3,4'-dihydroxy-5-hexadecanoate stilbene, 4'-hydroxy-3,5-hexadecanoate stilbene, 5-hydroxy-3,4'-hexadecanoate stilbene, 3,5,4'-trihexadecanoate stilbene, 5,4'-dihydroxy-3-octadecanoate stilbene, 3,5-dihydroxy-4'-octadecanoate stilbene, 3,4'-dihydroxy-5-octadecanoate stilbene, 4'-hydroxy-3,5-octadecanoate stilbene, 5-hydroxy-3,4'-octadecanoate stilbene, 3,5,4'-trioctadecanoate stilbene, 5,4'-dihydroxy-3-(9-octadecenoate) stilbene, 3,5-dihydroxy-4'-(9-octadecenoate) stilbene, 3,4'-dihydroxy-5-(9-octadecenoate) stilbene, 4'-hydroxy-3,5-(9-octadecenoate) stilbene, 5-hydroxy-3,4'-(9-octadecenoate) stilbene, 3,5,4'-tri-(9-octadecenoate) stilbene, 5,4'-dihydroxy-3-(9,12-octadecadienoate) stilbene, 3,5-dihydroxy-4'-(9,12-octadecadienoate) stilbene, 3,4'-dihydroxy-5-(9,12-octadecadienoate) stilbene, 4'-hydroxy-3,5-(9,12-octadecadienoate) stilbene, 5-hydroxy-3,4'-(9,12-octadecadienoate) stilbene, 3,5,4'-tri-(9,12-octadecadienoate) stilbene, 5,4'-dihydroxy-3-(6,9,12-octadecatrienoate) stilbene, 3,5-dihydroxy-4'-(6,9,12-octadecatrienoate) stilbene, 3,4'-dihydroxy-5-(6,9,12-octadecatrienoate) stilbene, 4'-hydroxy-3,5-(6,9,12-octadecatrienoate) stilbene, 5-hydroxy-3,4'-(6,9,12-octadecatrienoate) stilbene, 3,5,4'-tri-(6,9,12-octadecatrienoate) stilbene, 5,4'-dihydroxy-3-(9,12,15-octadecatrienoate) stilbene, 3,5-dihydroxy-4'-(9,12,15-octadecatrienoate) stilbene, 3,4'-dihydroxy-5-(9,12,15-octadecatrienoate) stilbene, 4'-hydroxy-3,5-(9,12,15-octadecatrienoate) stilbene, 5-hydroxy-3,4'-(9,12,15-octadecatrienoate) stilbene, 3,5,4'-tri-(9,12,15-octadecatrienoate) stilbene, 5,4'-dihydroxy-3-(3,6,9-octadecatrienoate) stilbene, 3,5-dihydroxy-4'-(3,6,9-octadecatrienoate) stilbene, 3,4'-dihydroxy-5-(3,6,9-octadecatrienoate) stilbene, 4'-hydroxy-3,5,6,9-octadecatrienoate stilbene, 5-hydroxy-3,4'-(3,6,9-octadecatrienoate) stilbene, 3,5,4'-tri-(3,6,9-octadecatrienoate) stilbene, 5,4'-

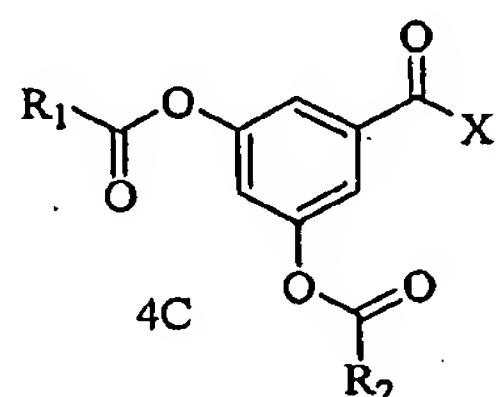
dihydroxy-3-(5,8,11,14-eicosatetraenoate) stilbene, 3,5-dihydroxy-4'-(5,8,11,14-eicosatetraenoate) stilbene, 3,4'-dihydroxy-5-(5,8,11,14-eicosatetraenoate) stilbene, 4'-hydroxy-3,5-(5,8,11,14-eicosatetraenoate) stilbene, 5-hydroxy-3,4'-(5,8,11,14-eicosatetraenoate) stilbene, 3,5,4'-tri-(5,8,11,14-eicosatetraenoate) stilbene, 5,4'-dihydroxy-3-(5,8,11,14,17-eicosapentaenoate) stilbene, 3,5-dihydroxy-4'-(5,8,11,14,17-eicosapentaenoate) stilbene, 3,4'-dihydroxy-5-(5,8,11,14,17-eicosapentaenoate) stilbene, 4'-hydroxy-3,5-(5,8,11,14,17-eicosapentaenoate) stilbene, 5-hydroxy-3,4'-(5,8,11,14,17-eicosapentaenoate) stilbene, 3,5,4'-tri-(5,8,11,14,17-eicosapentaenoate) stilbene, 5,4'-dihydroxy-3-(4,7,10,13,16,19-docosahexaenoate) stilbene, 3,5-dihydroxy-4'-(4,7,10,13,16,19-docosahexaenoate) stilbene, 3,4'-dihydroxy-5-(4,7,10,13,16,19-docosahexaenoate) stilbene, 4'-hydroxy-3,5-(4,7,10,13,16,19-docosahexaenoate) stilbene, 5-hydroxy-3,4'-(4,7,10,13,16,19-docosahexaenoate) stilbene, 3,5,4'-tri-(4,7,10,13,16,19-docosahexaenoate) stilbene.

15            23.        A compound of Formula 4C

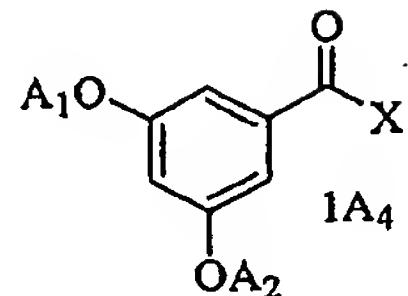


where X is halogen, R<sub>1</sub> and R<sub>2</sub> are each independently selected from alkyl with at least one carbon atom, aryl, aralkyl, and diastereoisomers of the foregoing.

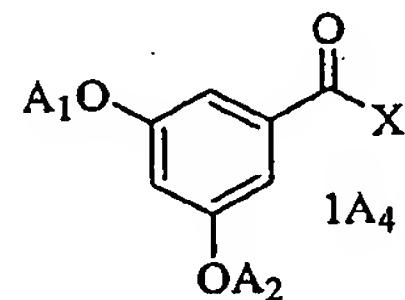
20            24.        A compound of Formula 4C



where X is halogen, R<sub>1</sub> and R<sub>2</sub> are each independently selected from alkyl with at least two carbon atoms, aryl, aralkyl, and diastereoisomers of the foregoing.

25. A compound of Formula 1A<sub>4</sub>

X is halogen, A<sub>1</sub> is selected from P<sub>1</sub> and (CO)R<sub>1</sub>, A<sub>2</sub> is selected from P<sub>2</sub> and (CO)R<sub>2</sub>, where P<sub>1</sub> when present is a first alcohol protecting group, P<sub>2</sub> when present is a second alcohol protecting group, R<sub>1</sub> and R<sub>2</sub> when present are each independently selected from alkyl with at least one carbon atom, aryl, aralkyl, and diastereoisomers of the foregoing.

26. A compound of Formula 1A<sub>4</sub>

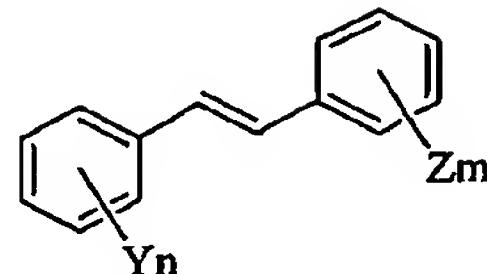
10 X is halogen, A<sub>1</sub> is selected from P<sub>1</sub> and (CO)R<sub>1</sub>, A<sub>2</sub> is selected from P<sub>2</sub> and (CO)R<sub>2</sub>, where P<sub>1</sub> when present is a first alcohol protecting group, P<sub>2</sub> when present is a second alcohol protecting group, R<sub>1</sub> and R<sub>2</sub> when present are each independently selected from alkyl with at least two carbon atoms, aryl, aralkyl, and diastereoisomers of the foregoing.

15 27. A compound selected from the group consisting essentially of: 3,5-diacetoxybenzoyl chloride, 3,5-diacetoxybenzoyl bromide, 3,5-diacetoxybenzoyl iodide, 3,5-dipropanoate benzoyl chloride, 3,5-dipropanoate benzoyl bromide, 3,5-dipropanoate benzoyl iodide, 3,5-dibutanoate benzoyl chloride, 3,5-dibutanoate benzoyl bromide, 3,5-dibutanoate benzoyl iodide, 3,5-dipentanoate benzoyl chloride, 3,5-dipentanoate benzoyl bromide, 3,5-dipentanoate benzoyl iodide, 3,5-dihexanoate benzoyl chloride, 3,5-dihexanoate benzoyl bromide, 3,5-dihexanoate benzoyl iodide, 3,5-dihexadienoate benzoyl chloride, 3,5-dihexadienoate benzoyl bromide, 3,5-dihexadienoate benzoyl iodide, 3,5-didodecanoate benzoyl chloride, 3,5-didodecanoate benzoyl bromide, 3,5-dihexadecanoate benzoyl chloride, 3,5-dihexadecanoate benzoyl bromide, 3,5-dihexadecanoate benzoyl iodide, 3,5-dioctadecanoate benzoyl chloride, 3,5-

dioctadecanoate benzoyl bromide, 3,5-dioctadecanoate benzoyl iodide, 3,5-di-(9-octadecenoate) benzoyl chloride, 3,5-di-(9-octadecenoate) benzoyl bromide, 3,5-di-(9-octadecenoate) benzoyl iodide, 3,5-di-(9,12-octadecadienoate) benzoyl chloride, 3,5-di-(9,12-octadecadienoate) benzoyl bromide, 3,5-di-(9,12-octadecadienoate) benzoyl iodide, 3,5-di-(6,9,12-octadecatrienoate) benzoyl chloride, 3,5-di-(6,9,12-octadecatrienoate) benzoyl bromide, 3,5-di-(6,9,12-octadecatrienoate) benzoyl iodide, 3,5-di-(9,12,15-octadecatrienoate) benzoyl chloride, 3,5-di-(9,12,15-octadecatrienoate) benzoyl bromide, 3,5-di-(9,12,15-octadecatrienoate) benzoyl iodide, 3,5-di-(3,6,9-octadecatrienoate) benzoyl chloride, 3,5-di-(3,6,9-octadecatrienoate) benzoyl bromide, 3,5-di-(3,6,9-octadecatrienoate) benzoyl iodide, 3,5-di-(5,8,11,14-eicosatetraenoate) benzoyl chloride, 3,5-di-(5,8,11,14-eicosatetraenoate) benzoyl iodide, 3,5-di-(5,8,11,14,17-eicosapentaenoate) benzoyl chloride, 3,5-di-(5,8,11,14,17-eicosapentaenoate) benzoyl bromide, 3,5-di-(4,7,10,13,16,19-docosahexaenoate) benzoyl iodide, 3,5-di-(4,7,10,13,16,19-docosahexaenoate) benzoyl chloride, 3,5-di-(4,7,10,13,16,19-docosahexaenoate) benzoyl bromide, and 3,5-di-(4,7,10,13,16,19-docosahexaenoate) benzoyl iodide.

28. A compound selected from the group consisting essentially of:  
3,5,-diacetoxy benzoyl chloride, 3,5,-diacetoxy benzoyl bromide, 3,5,-diacetoxy  
20 benzoyl iodide, 3-acetoxy-5-levulinoxy benzoyl chloride, 3-acetoxy-5-levulinoxy  
benzoyl bromide, 3-acetoxy-5-levulinoxy benzoyl iodide, 3-acetoxy-5-  
(methoxymethoxy) benzoyl chloride, 3-acetoxy-5-(methoxymethoxy) benzoyl  
bromide, 3-acetoxy-5-(methoxymethoxy) benzoyl iodide, 3-(levulinoxy)-5-  
(methoxymethoxy) benzoyl chloride, 3-(levulinoxy)-5-(methoxymethoxy) benzoyl  
25 bromide, 3-(levulinoxy)-5-(methoxymethoxy) benzoyl iodide, 3,5-bis(levulinoxy)  
benzoyl chloride, 3,5-bis(levulinoxy) benzoyl bromide, 3,5-bis(levulinoxy) benzoyl  
iodide, 3,5-bis(methoxymethoxy)benzoyl chloride, 3,5-  
bis(methoxymethoxy)benzoyl bromide, and 3,5-bis(methoxymethoxy)benzoyl  
iodide.

## 29. A compound of the formula

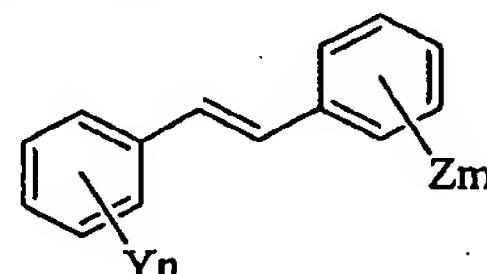


where each Y is independently selected from O(CO)R and halogen, n is equal to 0,

1, 2, 3, 4 or 5, Z is independently selected from O(CO)R and halogen, m is equal to

5 0 1, 2, 3, 4 or 5, the sum of n and m is 1 or more, each R is independently selected from alkyl with at least one carbon atom, aryl, aralkyl, and diastereoisomers of the foregoing.

## 30. A compound of the formula



10 where each Y is independently selected from O(CO)R and halogen, n is equal to 0,

1, 2, 3, 4 or 5, Z is independently selected from O(CO)R and halogen, m is equal to

0, 1, 2, 3, 4 or 5, the sum of n and m is 1 or more, each R is independently selected

from alkyl with at least two carbon atoms, aryl, aralkyl, and diastereoisomers of the foregoing.

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31. A compound according to claim 29 selected from the group consisting essentially of: 3,5,4'-trifluorostillbene, 4'-acetoxy-3,5-difluorostillbene, 3,5-difluoro-4'-hydroxystillbene, 3,5-diacetoxy-4'-fluorostillbene, 4'-fluoro-3,5-dihydroxystillbene, 3, 4'-difluoro-5-hydroxystillbene, and 3-fluoro-5,4'-dihydroxystillbene.

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32. The processes according to any of claims 1-18 where X is Cl.

33. The processes according to any of claims 1-18 where said first base is a non-coordinating amine base.

34. The processes according to any of claims 1-18 where said first base is a non-coordinating amine base selected from the group consisting of: N,N-dimethylbenzylamine, N-methylmorpholine, and dimethylaminopyridine.

35. The processes according to any of claims 1-18 where said first base is  
5 N,N-dimethylbenzylamine.

36. The processes according to any of claims 1-18 where said N-heterocyclic carbene-type ligand is selected from imidazolium, 1,3-disubstituted imidazolium, 1,3-disubstituted-4,5-dihydroimidazolium carbene-type ligands.

37. The processes according to any of claims 1-18 where said N-heterocyclic carbene-type ligand is N,N'-bis-carbocycle imidazolium ligands.  
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38. The processes according to any of claims 1-18 where said N-heterocyclic carbene-type ligand is selected from N,N'-bis-(2,6-diisopropylphenyl) imidazolium chloride, N,N'-bis-(dimesityl) imidazolium chloride and N,N'-bis-adamantylimidazolium chloride.

15 39. The processes according to any of claims 1-18 where said halogenating agent is selected from the group consisting essentially of: thionyl chloride, thionyl bromide, thionyl iodide, oxalyl chloride, oxalyl bromide, and oxalyl iodide.

40. The processes according to any of claims 1-18 where said  
20 halogenating agent is thionyl chloride.

41. The processes according to any of claims 1-18 where said halogenating agent is oxalyl chloride.

25 42. The processes according to any of claims 1-18 where said acylating agent is selected from the group consisting essentially of: ester anhydrides, mixed ester anhydrides, and acid halides.

43. The processes according to any of claims 1-18 where said acylating agent is acetic anhydride.

44. The processes according to any of claims 1-18 where said first protecting agent is selected from the group consisting of: MOM, and lev.

5 45. The processes according to any of claims 1-8, 11-14, and 17-19 where said second protecting agent is selected from the group consisting of: MOM, and lev.

10 46. The process according to any of claims 1 and 2 where said first base is selected from the group consisting essentially of: lithium hydroxide, sodium hydroxide, potassium hydroxide, and pyridine.

47. The processes according to any of claims 1-18 comprising the step of irradiating said compound with ultraviolet light in an inert solvent.

15 48. The processes according to any of claims 1-18 where said transition metal catalyst is a Pd II catalyst selected from the group consisting of:  $\text{Pd}(\text{OAc})_2$ ,  $\text{PdBr}_2$ , and  $\text{PdCl}_2$ .

49. The processes according to any of claims 1-18 where said Pd II catalyst is  $\text{Pd}(\text{OAc})_2$ .

20 50. The processes according to any of claim 1-18 where the deprotection reagents are selected from the group consisting of: sodium sulfite and sodium thiosulfite, aqueous pyridine at pH 6.7, NaI and TMSCl, alkaline earth metal hydroxide and a polar aprotic solvent.

51. The composition of claims 21 and 29 further comprising a therapeutically effective amount of said compound of Formula 1 in admixture with a pharmaceutically acceptable carrier.

52. The composition of claims 21 and 29 further comprising a cosmetically effective amount of said compound of Formula 1 in admixture with a cosmetically acceptable carrier are described.

53. The composition of claims 21 and 29 with mammalian enzymes including SIRT1 promoting cell survival.

54. The composition of claims 21 and 29 further comprising a nutritionally effective amount of said compound of Formula 1 in admixture with a nutritionally acceptable carrier.